Frankly Speaking

Looking Ahead

THE Institute of Traffic Engineers is well on its way to an expanded program that will permit it to give greater service to the membership, as well as to the many others who look to the Institute for help and leadership in meeting the current problems of traffic improvement.

The keystone in the arch of the more imposing structure is the employment of an Executive Secretary to devote full time to the many details. We have been extremely fortunate in the past in having available men to serve as Secretary-Treasurer who could devote a great amount of time to the work of the Institute because their employers were sold on the value of the organization. This is still true, but the Institute now demands full time service of at least one capable and energetic man, trained in traffic control.

Realizing this, the Board of Direction started working on the problem over a year ago. First, in order to expand the program, it was necessary to have a substantially increased budget, much greater than can be foreseen from present income derived from dues and publications. This should not be a recurring matter because greater service by the Institute will result in greater income.

A special committee headed by the Vice-President and including the two immediate past Presidents was set up to develop a program to obtain the necessary funds, and this committee has been working diligently for the past year. Latest reports are that the goal is practically achieved, and the final steps will be taken soon.

Many examples could be cited to prove the worthiness of the Institute and the need for this expanded program. The attendance at our annual meeting last October, which held the interest of a large group through day and night sessions should be enough alone.

Now for the final push. With the aid of the membership it should be possible to finish the job. It is also time for the members and others interested to consider the ways in which an increased program can be of service to them.

T. J. Sebum

President, Institute of Traffic Engineers

Timing Progressive Signal Systems

PART II

by JACK L. PETTERMAN, *Assistant Signal Engineer*
Traffic Engineering Bureau, City of Detroit

Ed. Note: The first part of this article appeared in last month's issue, in which the author outlines basic considerations. In this second half an actual problem is worked out employing the principles outlined previously.

The progressive system to be investigated is on Woodward Avenue, which is one of the more heavily traveled streets in Detroit. The average 24-hour volume on Woodward for both directions is about 25,000 vehicles. The signal off-sets, as will be found in the illustration, are the ones which are in effect on the system today.

To begin then, the first thing to do is to find the distances between signals and locate them on the working sheet. At this bureau, the distances are not plotted in feet but in another factor, called the "space time unit," which makes the solving of the problem much easier.

Space Time Unit

The distances between signals and the time to travel through the system are usually short, and the most convenient measurements to use are feet and seconds. Using feet as the ordinates and seconds as the abscissae, the slope of a line drawn from the beginning of the green period at one intersection to the beginning of the green period at the next intersection gives the average speed, in feet per second, that a vehicle must travel in order to reach the second intersection at the correct time. But, speedometers are calibrated in miles per hour, therefore, a conversion table must be referred to, to convert feet per second to miles per hour. This necessitates the use of a table, interpolation, and the general inconvenience of not knowing exactly where you are at all times.

With the speed given in feet per second, multiplying by the factor 0.682 will give the speed in miles per hour. This is the factor that is used in setting up the conversion tables. If the locations of the signalized intersections are plotted, not in feet "d", but in 0.682 d, and the time in seconds, the slope of the line will give the speed in miles per hour directly. If, in determining the speed, the horizontal distance is made equal to 10 or 100 seconds, the speed can be found by measuring up from the horizontal to the slope line, and this value, with the decimal point moved over one or two places gives the speed in miles per hour. The value 0.682 d is called by this bureau a space time unit, or more simply a stu.

Having determined the distances in feet between the signals, the values are then changed to "stus." These values for the system are shown in the table in Figure 1.

The next step is to show the signal locations on the working chart. It has been found that the best method is to use cross-section paper 10 x 10 to the inch, and to use a vertical scale of 1000 stus and a horizontal scale of 20 seconds to the inch.

After the cross-street locations have been drawn in, the speed lines are

FIGURE 1

WOODWARD SIGNAL SYSTEM
ADELAIDE TO CHICAGO BLVD.

Cross Street	*Distance (ft.)*	*S.T.U.*
Adelaide		
	2000	1364
Eliot		
	400	273
Mack		
	1270	866
Alexandrine		
	860	586
Canfield		
	840	573
Forest		
	860	586
Warren		
	1230	840
Kirby		
	1710	1165
Antoinette		
	2060	1405
Milwaukee		
	460	314
Grand Blvd.		
	870	594
Bethune		
	1070	730
Seward		
	3150	2150
Owen		
	1490	1015
Chicago Blvd.		

drawn in at the speed determined by the "floating car" method. An analysis of several runs indicated that the average speed for the entire system was a little under 30 mph, so the lines are put in at 28 mph, and an attempt will be made to so set the green periods that the progressive speed will be as close as possible to 28 mph. For the present the speed lines are merely used as a guide.

The Cut and Try Operation

If the system is fairly long, then it may be expected that quite a bit of manipulation may be necessary before the best settings are found. It has been found that the easiest way of handling this is to lay off the cycle lengths on strips of paper about ⅛ of an inch wide and to ink in a portion of each cycle, say about 30 seconds, to

represent the green period of that cycle. Obviously, the beginning of each green period will be a cycle-length away from the beginning of the next green period. Each strip is then pinned down over a line representing a signalized intersection, and if it is desired to change the offset at one of the intersections, the strip is moved in the desired direction and then pinned down again. When this method is used it is best to use a piece of thread or thin string, pinned at both ends, to represent the speed lines. The thread is put over the strips so that it is visible at all times, and can also be manipulated very easily. Figure 2 shows the working drawing with the speed lines temporarily located at 28 mph. The line going up from left to right represents the first car of a platoon traveling from Adelaide to Chicago at 25 mph. The line coming down from left to right represents the first car of a platoon traveling from Chicago to Adelaide at 28 mph.

Because some of the signals in this system are also interconnected with other systems which are on a 50 second cycle, it is necessary to also use the same cycle for this system. While another cycle length might give a better progression speed, it is not desirable to interrupt the progression on the cross-streets, particularly on Grand Boulevard, which carries about 32,000 vehicles daily. Neither is it desirable to break the progession on Woodward. So, the cycle is fixed at 50 seconds. The green period at some of the intersections may not be of sufficient length to pass all the cars, as explained in the general discussion, but again, it is preferable to allow a backup for a short period of time than to go to a longer cycle and thus interrupt the system.

Having determined what cycle length is to be used, the strips of paper with the 50 second cycle divisions are pinned down, and the individual strips moved about to see how closely the signals can be set for the desired speed. Figure 2 shows the working drawing with some of the

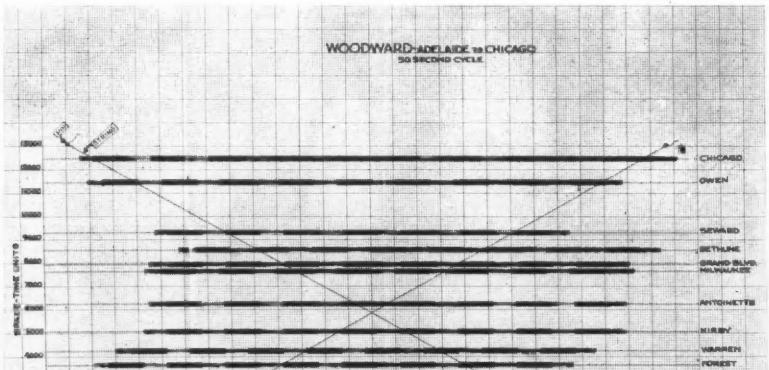

Fig. 2. Working chart has cycle strips added and string pinned on to indicate speed lines.

strips already moved into tentative positions. The lengths of green periods on the strips are not necessarily the lengths of the green that will be used at the intersection. They show exactly when the green periods may come on, but only approximately the length of the green. The strips are shifted about until the best possible progression is found.

Determining Cycle Splits

The next step is to determine the cycle splits. Woodward is a wide street and has rather heavy pedestrian movement for its entire length, so it is decided to start the determination from the standpoint of pedestrian requirements. The street width is 90 feet between Adelaide and Grand Boulevard, and 72 feet between Grand Boulevard and Chicago. For a pedestrian walking rate of 4 feet per second, a minimum cross-street green of 22.5 and 18 seconds respectively are required. The values that were used are 22 and 18 seconds.

These lengths of green can handle at least 10 and 8 cars per lane per cycle, respectively on the cross-street. (This is explained under previous section entitled *vehicle headways.*) It has been found that the effect of the amber period can be neglected in determining the number of cars passing through the intersection for a given green period. In effect, what this means is that the headway of vehicles is not exactly 2 seconds as mentioned earlier, but slightly less.

Since, for a 50 second cycle, there are 18 cycle changes in 15 minutes, the maximum value for the cross-street peak 15 minute volume should not be greater than 180 or 144 vehicles per lane, depending on whether the cross-street green is 22 or 18 seconds. If the volumes are greater, then the green must be lengthened accordingly.

An examination of the cross-street volumes shows that only Warren Avenue and Grand Boulevard have lane densities exceeding 180 vehicles in 15 minutes. All cross-street volumes for intersections between Grand Boulevard and Chicago are less than 144 vehicles per lane for the maximum 15 minute period.

Grand Boulevard has a maximum peak period of 546 vehicles for 15 minutes. Using 3 effective lanes, the lane density then becomes 182 vehicles in 15 minutes. This is an average of 10 vehicles per cycle; using this figure, the green period that should be used is then $9 \times 2 + 4 = 22$ seconds. By a similar analysis, the green period for Woodward should be 16 seconds. This leaves 12 seconds which may be applied to either street, in whole or in part. However, Grand Boulevard is about 100 feet wide, which requires 25 seconds for pedestrians to cross, so the cycle will be split 26 seconds green for Woodward, and 24 seconds green for Grand Boulevard. This also includes the amber period. No all-red period or any other special type of sequence is used, so the length of green on one street is also a measure of the red period on the cross street. An investigation of the volumes at Warren and Woodward reveals that Warren requires 25 seconds of green and Woodward 16. It is decided to give the entire additional 9 seconds to the Woodward green. If all of this green cannot be utilized, as determined by the progression chart, then some of it will be applied to the Warren green period.

All of the other cross-streets have more than sufficient time to take care of their traffic needs, so it is decided to give all the excess time to the Woodward period.

Shortened Green Periods

Figure 3 shows the completed working drawing after the best settings of the strips have been determined. The green periods have been transposed to

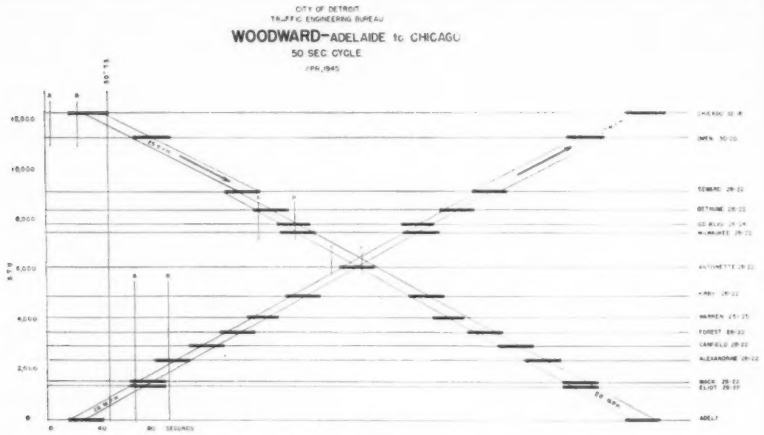

Fig. 3. The completed time-space diagram.

the work sheet and the correct lengths of green used. These are the values to right of the name of the cross-street. The values are the cycle split in seconds on Woodward, the first being the length of the green and the second the length of the red period. Of the streets above Grand Boulevard, only Chicago is given the 18 seconds of green which had previously been determined to be the correct cross-street green. It was felt desirable to increase the cross-street green at Owen because there is an offset at the intersection, and also because it has a two-track street car line. The lengths of the Woodward green periods have been reduced at Seward and Bethune because of the short green at Grand Boulevard. During the peak periods of the day, cars will come through an intersection as long as the green is on. Cars coming down from Chicago through Grand Boulevard will arrive for a period greater than 26 seconds. The longer the Woodward green at Bethune, the more cars will be backed up at Grand Boulevard. The more cars backed up, the longer it will take for the last stopped car to get started when it gets the green, and it is possible that vehicles coming down from Bethune will reach the intersection before the waiting cars have moved. This will result in a reduction of the average speed between signals, and the vehicles will be traveling at a speed other than that for which progression is set up. So, the Woodward green was set for 28 seconds.

In arbitrarily narrowing down a green period it is preferable to reduce several intersections by a small amount, rather than making all the reduction at one intersection. This gives an overall smoother flow of traffic.

Through Band

As mentioned earlier, the thread or line, having a slope equal to the progression speed, represents the first car in a platoon traveling at that speed. A line drawn parallel and to the right of the first line represents the last car of the platoon which, traveling at the progression speed will get through a series of signalized intersections without stopping. The time between the two lines, that is between the first and

last car of a platoon, is known as the "through band."

Critical Analysis of the System

An examination of Figure 3 shows that the progression that can be obtained is not entirely satisfactory.

The correct speed is approached rather closely between Adelaide and Seward, but drops between Seward and Chicago. Let us first analyze the progression, going from Adelaide to Chicago. First, the speed can be regarded as the correct speed for that direction. All the cars leaving Adelaide should get through Eliot without stopping. Those in the last 10 seconds of the band will be stopped at Mack, but the others should get through Mack, and some of them will also get through Alexandrine. Those that are stopped at Mack will probably be moving before another platoon leaving Adelaide can reach Mack. A large back-up of vehicles need not be expected at Mack because it has as long a green period as Eliot. Those vehicles leaving Mack during the first 17 seconds of the green period should get through all the signalized intersections up to Grand Boulevard. Those leaving Mack during the last 11 seconds of the green will probably be stopped at Alexandrine, will get started again at the beginning of the green at Alexandrine and be stopped again at Canfield. When they leave Canfield they will then be at the beginning of the platoon and should get through most of the other signals pretty well.

The progression from Mack to Canfield is fair and from Canfield to Milwaukee is very good, but it becomes bad at Grand Boulevard. Only those vehicles in the first 11 seconds of the "through band" leaving Milwaukee may get through Grand Boulevard without stopping. The others will be stopped, and since the green at Milwaukee is longer than it is at Grand Boulevard, vehicles will accumulate and create a back-log. Although only 16 seconds of green are required to clear Woodward traffic, actually the vehicles will come through for the full green period, that is, the headway is increased. This means that about half of the vehicles will be in the 11-second "through band" and the other half will be stopped at Grand Boulevard. These stopped vehicles, together with the turns northbound onto Woodward at Milwaukee, and the slower starting time at Grand Boulevard because of the heavy pedestrian crossing, plus the short distance between Milwaukee and Grand Boulevard, will result in the next platoon of vehicles, traveling at the progression speed arriving at Grand Boulevard before the stopped vehicles have gotten under way. The result is a back-log of vehicles.

It was found that during the peak period the back-up was so great that it extended into the Milwaukee intersection. To relieve this condition it was decided to shift the beginning of the Woodward green at Milwaukee about 11 seconds to the left, during the peak period. The effect of doing this was to back up the vehicles at Milwaukee where they wouldn't cause as much interference. Obviously, this throws the progression off completely for vehicles traveling in the opposite direction, but during this period this volume is comparatively light. The offset as shown in Figure 3 is the one which prevails during the off-peak hours.

It was not possible to shift the green at Grand Boulevard because this is tied in with the progression on Grand Boulevard and cannot be moved without upsetting that progression. Regardless of the setting of the Milwaukee green, most of the vehicles will be caught at Bethune. Leaving Bethune, the vehicles are again in the

platoon and should get through the remaining signals without much trouble.

A similar analysis for progression in the opposite direction shows that the bad spots will probably be at Seward, Milwaukee, Kirby, Warren and possibly Forest. This doesn't mean that all of the vehicles will be stopped at one or more of these intersections, but if some do get caught at one, the chances are that they will also be stopped at the following signalized intersection.

For the peak period for this direction of movement, the setting of the green period at Milwaukee has been shifted about 6 seconds to the right of the position shown. This was done to prevent the backing up of vehicles into the Grand Boulevard intersection for much the same reasons that it was shifted the other way when the peak travel was in the opposite direction. Shifting the offsets required special equipment at the Milwaukee controller.

The present system has been in operation for some time now, but some changes are being contemplated.

The progression speed between Seward and Chicago will probably be increased to about 28 mph. This will require the Chicago green period to be shifted completely out of the band for one direction of travel, but since only a portion of the inbound green is in the band now, this will not be too great a loss. Also contemplated is the reduction of the progression speed on either side of Grand Boulevard, if possible. This has not been completely investigated as yet.

Reference Line

The vertical line on the chart marked 50″ T.S. is a reference line. The traffic signal maintenance department has a number of synchronous, continually running mechanisms. There is one mechanism for each cycle length used, and each mechanism is set so that an indicator makes one complete revolution in one cycle length. All signals are set with reference to the zero position of the indicator for the desired cycle length. The vertical line then, represents the zero position of the indicator on the clock set for the 50 second cycle. The abbreviations T.S. stand for Time Signal. The maintenance man, when setting the signals, puts in a telephone call to the maintenance department, and the zero position is indicated to him by a tone. All the signals are then set so that the beginning of the green or red period comes on at a definite time after the time signal. The time is determined by measurng from the time signal line to the beginning of the period. For example, the Seward signal would be set for the beginning of the Woodward green period to come on 19 seconds after the time signal.

The use of the time signal as a base point from which all offsets are figured eliminates the cumulative error possible when the settings along a system are each based on a relationship to the previous signal.

If the system is not interconnected with any other, the time signal line can be drawn in anywhere. In this example, however, it had to be put in 37 seconds before the beginning of the Woodward red period at Grand Boulevard. This position was necessary because of the location of this line on the progression chart for Grand Boulevard.

Lead and Lag

Many handbooks suggest setting some signals for a leading or lagging green to take care of turns, etc. A signal has a leading green if the green period is set in advance of the "through band." In a lagging green,

the beginning of the green period comes on during the "through band." In Figure 3, Alexandrine presents a leading green for vehicles coming up from Mack.

The progression system used in the example can be regarded as a typical system and it can be readily seen that the settings are dictated by necessity. Any shifting of the green periods so that they will lead or lag the band will result in the narrowing down of the band. For this reason a lead or lag is not provided unless absolutely necessary.

Progression Speed Signs

Where possible signs are installed at signalized intersections informing drivers of the speed for which progression has been set up. These signs are installed only at those intersections where the beginning of the green period is at the beginning of the "through band." Obviously, signs cannot be installed at all if the progression speed is greater than the legal speed limit.

All signal systems are finally drawn on cross section paper, 10″ x 15″ and bound in a loose-leaf folder. This provides for easier handling than possible with the large working drawing and presents a neater appearance for presentation. The scales are changed too so that the entire system can be drawn on a single sheet. The working drawings are also kept and contemplated changes and additions are made on these first.

Also shown in the final drawing but not on the working drawing, are vertical lines marked A & B. These represent impulses sent out by master controllers to the local controllers which are physically connected to them, and is one method used in keeping the local controllers in step. The master controllers themselves are run by synchronous motors so that there is always a constant relationship between the impulses and the time signal.

There are 4 masters controlling all the local controllers except Seward. At this intersection, the local controller is run by a synchronous motor which maintains the correct offset from the 50-second time signal.

These impulses were not shown in the working drawing because they do not enter into signal-timing determination. They are shown on drawings only when the local controllers are of the type that are kept in step by masters using this method. In these cases the offsets are given from the impulses as well as from the time signal. This is purely a precautionary measure.

DRUNKEN DRIVING ARRESTS INCREASE

Motor Vehicle Bureaus in New York, New Jersey and Connecticut report a sharp increase in suspension and revocation of drivers' licenses for drunken driving according to the Council of State Governments.

During the first ten months of 1946, 785 drivers' licenses were suspended and revoked in the state of New York as against 448 for the same period last year. In New Jersey, licenses of 860 persons were suspended and revoked up to Nov. 30, 1946 for drunkenness. During a similar period last year 594 licenses were invalidated.

Officials of the Motor Vehicle Bureau in Connecticut report 988 suspensions and revocations for drunkenness in the first ten months of 1946 as compared with 898 for the same period in 1945.

Some Light on the Subject

by HOWARD F. ILGNER, *Member I.T.E.*

Superintendent and Chief Engineer, Bureau of Electrical Service, Milwaukee, Wisconsin

THE most noteworthy contribution to the art of street and highway lighting during the past year was the adoption and publication by the Illumination Engineering Society of "*Recommended Practice of Street and Highway Lighting, 1945*" prepared by its Committee on Street and Highway Lighting. This report was over two years in the making and supersedes *Recommended Practice of Street and Highway Lighting, 1940.*

A number of members of the Institute of Traffic Engineers actively participated in the preparation of this report, while others sent in comments which were forwarded to the Sub-Committee in charge of writing the drafts. The final draft as adopted and published has been sent out by the Illuminating Engineering Society to various organizations, including the Institute of Traffic Engineers for their endorsement for the adoption of *Recommended Practice of Street and Highway Lighting, 1945* by the American Standards Association as an American Standard. Accompanying this request was a statement concerning the recommended practice of street and highway lighting giving certain historical and pertinent information relative thereto.

The Street and Highway Lighting Committee of the Institute of Traffic Engineers met on October 3, 1946, at Columbus, Ohio, with seven members present and discussed at length the desirability of making this endorsement. The following recommendation was finally adopted by a five-to-two vote of the Committee with a subsequent unanimous agreement that the views of the majority be actively supported and furthered by the Committee as a whole:

> "RESOLVED, That the *Recommended Practice of Street and Highway Lighting, 1945* as developed by the Illuminating Engineering Society be endorsed by the Institute of Traffic Engineers for adoption as an American Standard, and
>
> RESOLVED FURTHER, That *Recommended Practice of Street and Highway Lighting, 1945* be approved by the Institute of Traffic Engineers as the current authoritative guide in the installation and modernization of street and highway lighting."

Differences of opinion were not based on opposition to the contents of *Recommended Practice of Street and Highway Lighting, 1945* but on the desirability of making it a standard at this time before experience has shown that traffic and safety needs have been fully met or that early post-war developments will not make changes desirable.

Institute Approves Code

The Institute of Traffic Engineers, at the 1946 Annual Business Meeting in Columbus, Ohio, officially adopted the Committee's recommendation, thus approving the I.E.S. code.

The Committee favored the cooperation of members of the Institute of Traffic Engineers with the Illuminating Engineering Society in research

work involving traffic safety and facility problems.

The Committee also suggests that all members of the Institute get a copy of the *Recommended Practice of Street and Highway Lighting, 1945* as soon as possible in order to bring their street lighting information up-to-date. The street lighting section of the Traffic Engineering Handbook is now obsolete inasmuch as this section was largely based on the *Recommended Practice of Street and Highway Lighting, 1940.*

Copies of the *Recommended Practice of Street and Highway Lighting, 1945* can be purchased for 50c per copy from the headquarters office of the Illuminating Engineering Society, 51 Madison Avenue, N.Y.C., or from street lighting equipment manufacturers.

Foot Candles Nearly Doubled

The fourth code since 1930, the 1945 recommendations show a great development in the science of street lighting. Most significant of the differences between the 1940 and 1945 editions are that the foot candle measurements have been nearly doubled for residential, light and medium traffic streets, and pavement reflectivity is considered in recommending the light required.

The following table shows the recommended number of footcandles for the various classifications of streets:

	Pedestrian Traffic	*Vehicular Traffic*		
	Very Light (Under 150)	Light (150 - 500)	Medium (500 - 1200)	Heavy to Heaviest (1200 Up)
Heavy	*	0.8	1.0	1.2
Medium	*	0.6	0.8	1.0
Light or None	0.2	0.4	0.6	0.8

* The inclusion of pedestrian traffic eliminates the arbitrary classification of streets.

The Committee on Street and Highway Lighting has determined that new black-top roadways have three per cent reflectivity, macadam, ten per cent, and new concrete, twenty per cent. The code is designed for macadam roads and therefore fifty per cent more light is required for new black-top thoroughfares and the light may be decreased 25 per cent for new concrete streets.

The new Code recognizes and classifies five types of light distribution suitable for street lighting and outlines the application of each. Typical distributions of the luminaires are shown in diagram form depicting narrow asymmetric, medium width asymmetric, wide asymmetric, symmetric and two-way distributions. In order to decrease the distribution on the pavement, the Committee has recommended higher mounting heights.

Intersection Lighting

The safety factor again enters the picture on lighting intersections. The new Code specifies that an intersection should have the same light intensity as the sum total of the two intersecting streets. Much higher intensities are recommended for complex intersections.

By virtue of this new Code, prospective street and highway lighting purchasers have the advantages of impartially prepared and generally accepted recommendations which will eliminate all possible controversies between customers and suppliers.

State and city officials will be "in the market" for street and highway traffic safety lighting in conformity with the I.E.S. Code as a result of the President's Highway Safety Conference which was attended by representatives of over sixty organizations, all of them experts in their fields.

Eight preliminary reports were compiled by various committees. An "Action Program" was prepared as a consolidation of these preliminary reports. It is significant that high up on the list of engineering steps recommended to reduce traffic fatalities is "Provision of modern street and highway lighting on many urban streets and on the more hazardous sections of suburban and rural highways."

The Action Program is to be taken up at similar conferences in each of the 48 states. The first state meeting was held at Columbus, Ohio and adequate street and highway lighting received prominent mention and discussion in the conference.

This article is based in part on the report of the I.T.E. Street & Highway Lighting Committee at the October 1946 I.T.E. Business Meeting. The author is Chairman of this Committee.

The Automobile Industry Looks to the Future

by ALBERT BRADLEY, *Executive Vice-President*
General Motors Corporation

HIGHWAY transportation is so much a part of everyone's life that it is sometimes taken too much for granted. If its full impact on our total economy were really appreciated by those who benefit from it, its development in the future, through adoption of sound and equitable laws and regulations by the Federal and State governments, would be assured.

The reason for our dependence on motor truck transportation in wartime and in peacetime is obvious when we consider how closely the things we eat and wear and use are interlocked with distribution over the highways.

The Nation Depends on Trucks

For instance, thirty years ago less than 2 per cent of the nation's livestock was hauled to market by motor truck. Last year nearly 67 per cent of all livestock tonnage moved into the stockyards by truck. Thirty-four of America's largest cities depend entirely on trucks for milk, while more than 71 per cent of the poultry and 65 per cent of the nation's egg crop move over the highways.

All indications are that growth of peacetime enterprises and a further trend toward decentralization in many lines of business will create a greater need for this flexible medium of transportation in the future than ever before. A 12 per cent increase in motor truck registrations for the year 1946 over 1945 already points in this direction. The question is, how great will the increase be in 1947—and that, of course, depends to a great extent on the automotive industry.

Why aren't we building more trucks?

Well, we certainly wish we were. Speaking for General Motors, we had planned facilities and organization with the expectation that by this time we would be producing a record volume of both cars and trucks. If any-

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THE PRISMO SAFETY CORPORATION

HUNTINGDON · · · · · · · PENNSYLVANIA

body had told us a year ago that in 1946, the first full year of post-war production, we would only turn out 40 per cent as many cars and 70 per cent as many trucks as in the 1941 model year, we would have said, you're crazy.

Three Snags in Production

What's been the matter? We ran into three major difficulties. Most serious has been the materials shortages which have plagued us since production was resumed and which continue to plague us. There just has not been enough steel, pig iron, lead, copper and zinc to go 'round. Demand for steel, for example, is at a peak not only in our industry but also in other industries — railroads, railroad equipment, agricultural implements, construction, and so on. On top of that it has been necessary to refill all the pipelines and distribution channels of normal trade.

The second major snag has been strikes. First, there was the UAW-CIO strike against General Motors. Then, there were last year's steel and coal strikes. We felt the effects of them for months. Finally, we have been constantly plagued by a large number of strikes in the plants of our suppliers. Although some of these strikes in suppliers' plants do not involve a large number of workers, their impact is none-the-less serious. Our business isn't like—say—the ice cream business where, if a company is supplied with 90 per cent of its raw materials, it can take care of 90 per cent of the demand. In our business we might receive 90 per cent of our total materials but still be unable to

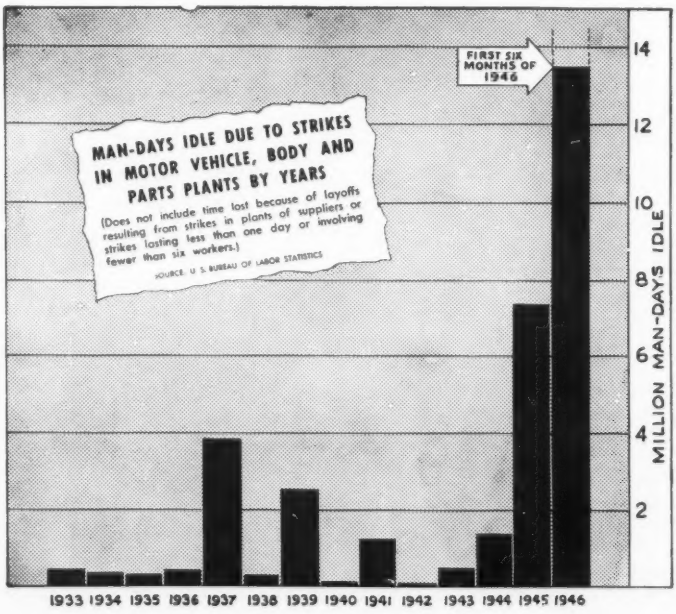
FIRST SIX MONTHS OF 1946
MAN-DAYS IDLE DUE TO STRIKES IN MOTOR VEHICLE, BODY AND PARTS PLANTS BY YEARS
(Does not include time lost because of layoffs resulting from strikes in plants of suppliers or strikes lasting less than one day or involving fewer than six workers.)
SOURCE: U. S. BUREAU OF LABOR STATISTICS
MILLION MAN-DAYS IDLE
14
12
10
8
6
4
2
1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946

Fig. 1. Production time loss to the motor car industry soared last year.

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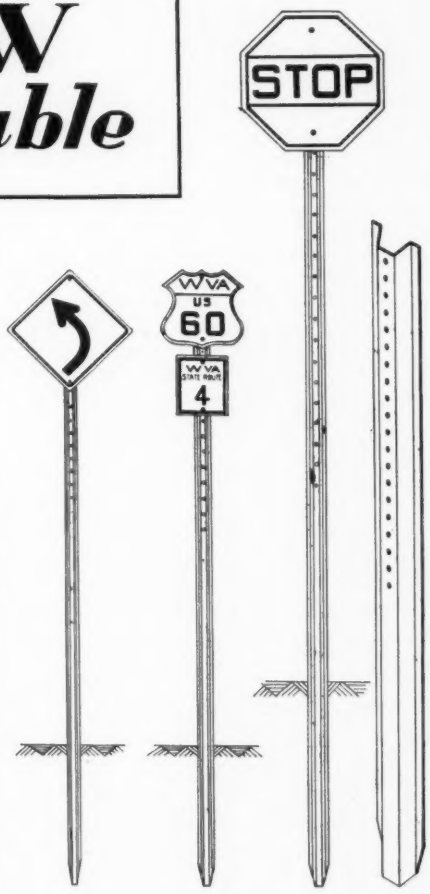

THE HUNT COMPANY

Established 1920

3700 W. McNichols Rd. Detroit 21, Mich.

produce a single car or truck. For example, last spring our GMC truck division was held up for seven weeks after our own strike had been settled because of a strike in the plant of the supplier who furnished crankshafts.

At one time last year there were 116 such supplier strikes affecting GM production, and, even though the trend was downward through the year, the total never got below 20.

The third snag which hindered production throughout the year was Government policy with respect to materials allocation and price controls and also the Government's undue encouragement to labor's demands.

As a result of this unfortunate combination of materials shortages, strikes and Government policy, we have been seriously delayed in getting into volume production. While General Motors passenger car production during the fourth quarter of 1946 amounted to 398,000 units, this was only 64 per cent of our best quarter in 1941. The principal limiting factor was a shortage of steel. We cannot expect to do any better than that rate until after the second quarter of this year—even if there are no major delays resulting from strikes—again due primarily to a shortage of steel. In the case of commercial trucks the picture is somewhat better. We exceeded our 1941 rate last summer, but we have not been able to maintain this peak rate due to materials shortages, principally steel.

Five Million Vehicles in '47

As far as the over-all picture is concerned, it does not look as though the industry can do better than produce 4,500,000 to 5,000,000 passenger cars and trucks during 1947, compared with 5,500,000 for the 1941 model year. Of course, it must be remembered that we also have the job of maintaining a greatly expanded volume of service parts needed to keep vehicles on the road.

We know that a real shortage of transportation exists. For three years no cars and only a few civilian trucks were produced. Production in 1946 was subnormal. Many vehicles are

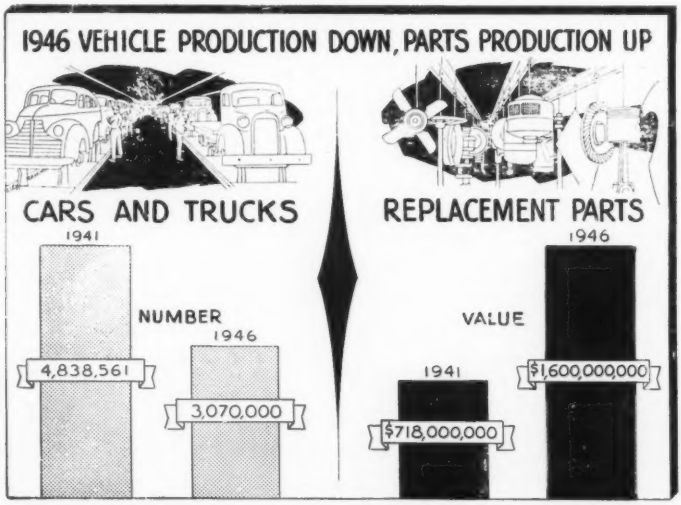

Fig. 2. High parts output in 1946 helped to keep cars on the road. Many are operating today which would normally have been scrapped.

still operating which under normal conditions would be scrapped. Unquestionably the potential demand for cars and trucks is large. It is in part, however, even today, a postponable demand. Because of this the level of automotive prices is an important factor.

Automobile Prices

Statements have been made that the automotive industry would be only too happy to raise prices. Nothing could be further from the truth. The industry is geared to operate profitably only at high volume, and the only way to achieve high volume is to keep prices down. High prices are the last thing the automotive industry wants, or industry in general for that matter. When Senator Taft recently said, "The solution for the country is lower prices, not higher wages," he spoke not only for consumers but for business as well. However, it is also obvious that you must recover your costs in your selling price and earn a profit to keep the business healthy.

Since wages—direct and indirect, including those paid by the company itself and also those paid by concerns which furnish it with materials, supplies and services—are the biggest element of cost, a wage increase means a cost increase and a cost increase means a price increase, unless, of course, output per worker has been stepped up to compensate for the wage increase.

During the war, when prices were artificially held down both by government regulations and by subsidies, labor costs rose faster than prices. What has been happening recently is that prices have been struggling to regain a normal balance with costs. This has been made to appear to be a breakdown of "natural" price control. We are told that the free competitive method of keeping prices in check no longer operates—although we saw it work last fall after meat prices had soared and we are seeing it operate right now in certain retail lines and in certain basic commodities. Obviously, as Mark Sullivan has pointed out, business is not able to control prices at will. The upward pressure on prices is costs and demand; the downward pressure competition and consumer resistance.

Wages and Profits

We are told again and again that workers have lost ground since the wartime wage peak. Now it is perfectly true that workers are earning less today in real wages than they did at the wartime peak, but real wages are still higher than ever before in the peacetime history of the country. From 1939 to November, 1946, the cost of living rose 53 per cent while hourly earnings of factory workers rose 79 per cent and gross average weekly earnings rose 91 per cent. Going back to 1929 when wages hit an all-time high up to that date, we find that in the succeeding 17 years weekly wages increased nearly 75 per cent while the cost of living increased less than 25 per cent. This was made possible largely by increased productivity. Another point to remember is that today people are not working as long hours as they did in wartime, nor do they want to, judging by the large amount of absenteeism. They prefer a certain amount of leisure, but the point is they can't have their cake and eat it too. I still have the apparently old-fashioned idea that there should be some relationship between what a worker produces and what he is paid, and that the only way to earn more is to produce more. A wage increase on any other basis is like trying to lift yourself by your bootstraps.

Much is being made of the point that profits in the aggregate are greater today than during the period 1936-39.

Would those who wish to go back to 1936-39 profits also wish to return to 1936-39 employment when 6,000,000 to 10,000,000 persons were jobless? Or to 1936-39 business conditions when more than half of all companies reporting to the Bureau of Internal Revenue reported losses, not profits?

I am sure the average man does not realize the extent to which the use of aggregates causes distortion. Take, for instance, a simplified case:

In 1936 Company A made a two million dollar profit. Company B, in the same line of business, lost a million dollars. The aggregate profit of the two companies in 1936, was therefore, two minus one or one million dollars. Now we come to 1946, and Company A continues to make two million dollars—no increase over 1936. Company B, however, is now in the black too although it is making no more than its competitor A. Both companies, in other words, are now making what was considered a fair profit in 1936: two million dollars a year. However, when you look at the aggregate, what do you find? Truly an outrageous situation. Two greedy corporations have jumped their aggregate profits from one million dollars in 1936 to four million dollars in 1946, an increase of 300 per cent.

Of course, profits are high today compared to a period when so many companies operated in the red, but they aren't high all across the board, as I can well testify. Again, are they high when related to the growth in national income or when the inflation factor is considered? To what extent are current profits non-recurring? To what extent are they inventory profits that may never be realized in terms of dividends or surplus?

The basic trouble to my mind is that everybody knows that wages pay the grocer and the doctor and the landlord but too many think of profits as being gravy or else do not fully understand the function of profits. If we could clear up this one misconception, I think it would do more than any other single thing to keep the country firing on all cylinders. Profits are not a luxury; nor do they benefit only those who own stock. Profits and the prospect or hope of profits are the mainspring of our economy; they are the force down underneath the cogs and wheels that really makes the mechanism tick. We hear a lot these days about maintaining the take-home pay of workers. What about the need for maintaining the take-home pay of investors? That is just as important. Out of earnings paid in dividends and reinvested by stockholders and out of earnings retained in the business comes the capital that makes jobs possible. General Motors is now embarked on a 750 million dollar improvement and expansion program. Part of the funds being used represent profits already earned. Part represents capital furnished by investors who hope for future profits.

Competition Will Lower Prices

The greater good results when the consumer is the chief beneficiary in the form of lower prices. In the first place all consumers can enjoy the benefits of lower prices, whereas workers in any one industry only constitute a minority of the population and even all factory workers constitute only one-fourth of those gainfully employed. In the second place, lower prices mean increased volume and increased volume means increased employment and more good jobs.

I certainly have no quarrel with the theory that mass production requires mass consumption—in fact, the automobile industry was not only weaned on this theory but has grown up on it. The point I wish to make is that mass consumption is best promoted by

lowering prices to broaden the market and that lower prices come about through the free operation of the competitive system.

As a matter of fact, if all of us would learn to think as consumers instead of as various special interest groups with conflicting demands, we would get along much better and most of our troubles would probably be solved.

I realize that there is nothing very new in what I have said, but I feel that, like the Ten Commandments, those fundamental truths need to be repeated. Furthermore, I think that the very fact that we are all discussing such things as wages, prices and profits is encouraging. It is encouraging that people are thinking about economics at all. True enough, their thinking is not always sound, but eventually we may be able to correct the misconceptions and gain a wider acceptance for some of the simpler economic truths.

Right now the simple economic truth is—our country needs stable wages, it needs uninterrupted production, it needs increased output per man-hour. Our country needs to think once more in terms of the consumer, the customer; he is the only dictator this country will stand for.

To me our path is clear. Down one road lies inflation and curtailed production; down the other lower prices, expanding production, an improved standard of living. If we take the right road, we can all look forward to a period of expanding prosperity that will last for many years.

Notes on Nebraska's Traffic Safety Conference

by JAMES E. READING, *Associate Editor*

ABOUT 600 persons attended the Statewide Traffic Safety Conference at Lincoln, Nebraska on October 31 and November 1 of last year, and witnessed the development of a series of committee reports covering every phase of traffic safety. The 2-day conclave was similar to the President's Highway Safety Conference (of May, 1946) in organization and scope, whereby committees, previously selected and put to work, presented the results of their deliberations at the Conference.

The program included many addresses, featuring, among others, Governor Griswold; Pyke Johnson, President, Automotive Safety Foundation; W. Earle Hall, Chairman, National Committee for Traffic Safety, and Sidney Williams, Asst. to the President, National Safety Council.

All of the Committees at the Conference made impressive recommendations in that they left no stones unturned in an effort to be comprehensive. The underlying emphasis seems to be to take nothing for granted, to take inventory on what the state has in physical conditions, methods, manpower and its competence and general attitude toward the whole field of traffic safety.

Vehicle Code

It is heartening to note that they not only propose to check the State Vehicle Code and its administration and enforcement against national standards, but to advise the legislature

as to conformity or lack thereof. The same thing applies in the case of traffic signs, signals and markings. This indicates an all-out attempt to bring the state as nearly as possible in line with nationally adopted standards and to carry this uniformity into local jurisdictions as well as state.

Because of the direct relationship between engineering and the other phases of traffic safety activities, it is interesting to note the extent to which the Police are asked to emphasize selective enforcement, improved accident investigation procedure, special attention to the pedestrian problem and avoidance of special privileges in certain cases. All of these items are so closely connected with the endeavors of the traffic engineer as to be a constant source of embarrassment if they are not properly handled. By the same token, the Nebraska Conference moved in the right direction in asking for competent personnel and methods in the prosecution of traffic court cases.

Accident Records

The Committee on Accident Records was impressive in its series of recommendations. Nebraska has a good reputation in regard to the methods and effectiveness of its traffic accident reporting. In spite of this, it has taken nothing for granted and has recommended steps which will assure that the entire accident reporting setup be reviewed to make sure that every possibility of improvement is considered and explored. The National Safety Council is handicapped in its efforts to compile nation wide traffic accident statistics by lack of uniformity throughout the nation in methods of reporting, variations in interpretation, the extent to which breakdowns are carried out, and the completeness of the reporting. Other states will do well to follow Nebraska's lead in striving for an accident record program which will conform to national recommendations. Since accident records are the backbone of an important phase of traffic engineering work, all traffic engineers should be interested in seeing Nebraska's Accident Record Committee's report being carried out and followed by many other states.

There is a tremendous opportunity in the field of Traffic Safety Education. Such education not only serves to reach all ages of school children but also in varying degrees all types and classes of adult drivers and pedestrians. Many well handled educational campaigns have accomplished marvelous results in reducing accidents, obtaining public understanding and acceptance of enforcement practices, and traffic engineering methods and devices, thus, serving not only the end of education in itself but also correlating the three E's.

Surely Nebraska has much to gain by sincerely following the report of the Committee on Education. Other states and cities throughout the nation can profit from the comprehensive and well considered findings of this Committee.

Engineering

The Nebraska Traffic Safety Conference Committee on Engineering very effectively reminds us that we are still prone to set our sights too low, to accept standards which we should realize will be outmoded all too soon. There is still not enough bold, far sighted planning in street and highway design, with the result that we are still constructing traffic facilities which are virtually obsolete the day they are placed in service.

The need for competent traffic engineering was emphasized as never before at the President's Safety Conference in 1946. In fact, in many circles it awakened large numbers of people to the very existence of such a profession.

Traffic engineers in turn are on the spot as never before to prove their competence and take their place among the recognized professional engineers. It is encouraging to note that the Committee has recognized and made recommendations to cover some of the handicaps under which traffic engineers usually work. All too frequently funds and personnel are inadequate to do justice to the engineer's assignments. Administrators and legislators too frequently yield to petitions, pressure groups and the opinion of important but uninformed individuals in "determining" the "need" for traffic control devices and other engineering improvements. The lack of adequate funds frequently results in poorly maintained signs, signals and markings with the result that these devices lose their effectiveness and fall into disrepute carrying the engineer's reputation down with them.

States and cities throughout the nation are still spending vast sums to make improvements on existing streets and highways where there is free access from the abutting property at all points. The Engineering Committee has very pointedly emphasized the value of limited access in improving the efficiency of highways.

Lighting Left Out

The Committee does not appear to have given street lighting the important position that its value seems to have deserved. Marvelous results are being accomplished throughout the nation by the proper use of modern traffic safety lighting.

Many cities and towns are still following "horse and buggy" thinking and methods in the matter of regulating street parking and in failing to recognize the value of and need for off-street parking facilities. There is a tendency to consider parking regulations as simple matters which any layman is competent to handle. Competent laying out of parking lots and designing of parking structures pay dividends in increasing the capacity and safety of parking facilities which are convenient and attractive for users.

Nebraska is to be commended for the forthright down-to-earth manner with which they have attacked the traffic safety problem. Well presented facts on all phases of the problem will do much to educate legislative and administrative officials. Resulting legislative cooperation should do much to lighten the burden for enforcement, educational, and engineering officials by providing the wherewithall to adequately perform their functions.

BUFFALO, N. Y., CONSIDERS DOWNTOWN PARKING PLANS

Using the experience of San Francisco, Calif., as a criterion, city officials of Buffalo, N. Y., are studying proposals for downtown parking facilities, including an underground garage in Lafayette Square.

Henry W. Osborne, traffic adviser to the Buffalo Board of Safety, believes that one such garage will not answer the problem. He pointed out that it would serve only a limited area, and that at rush hours the exodus of cars would cause traffic congestion on streets surrounding the facility.

"We want four such facilities," said Mr. Osborne, "two east of Main St. and two west of Main, north and south of Court St. That would pull traffic off the streets before it gets in the core of trouble."

Favoring multi-deck garages above ground, Mr. Osborne explained the cost is about $700 per stall or car space as against $2,000 to $7,000 per car for the underground facility.

TRAFFIC LIGHTS FOR CONSTRUCTION EQUIPMENT

We've seen two examples recently where stop-and-go lights performed a vital safety service in keeping earth-moving equipment from tangling with fast moving traffic.

One was on U.S. 80 between Fort Worth and Dallas. This is the main highway between these adjacent cities, and it carries around ten thousand vehicles daily. This past summer two miles of U.S. 80 was regraded parallel to the present pavement, in order to

NEW CARS MADE RUST-PROOF

Car owners in the future will have almost complete protection against rust and corrosion. A survey of leading automobile manufacturers made by the Ice Removal Bureau reveals that fenders and bodies of new models are being treated to reduce the rusting caused in the past by rain and snow that splashed on the under parts of the car and ran down from the windows into the door frames.

Exposed parts of new cars are coated with a phosphate solution which protects them against corrosion, and then are painted for further protection, the survey indicates. According to a test conducted by one manufacturer, parts treated and painted in this way wear four times longer than untreated parts, with no evidence of rust.

In addition to this treatment, some manufacturers are also making provisions for better draining by improving the design of new cars. Although many people think of rust as affecting only the exposed parts of the body, the worst corrosion is apt to occur in other places. Condensation water from the windows runs down on the inside of the car and is pocketed between doors and frames. Because seep holes become plugged by road dirt, this water has been the main cause of corrosion in the past.

Although the chemicals used for snow and ice removal are often blamed for producing corrosion, they do little of the damage generally attributed to them. Even when they are not used rusting has occurred in the past, and it can be greatly reduced by washing down the under parts of the car at regular intervals so that road dirt is removed. Any dirt particles adhering to the car will pick up moisture and hold it against the metal on wet days during the summer and winter.

Mufflers will also be treated with a phosphate coating, although it has been found that exhaust gases condensing inside the muffler cause most of the rusting there. Because of this, mufflers generally rust from the inside out, instead of from the outside in, as many people believe.

raise the road level several feet across a creek overflow area. Selfpowered scrapers had to cross existing pavement to and from a borrow pit, making hundreds of such crossings daily.

Naturally something had to be done, so the contractor and the state cooperated with a light, which was operated by a man stationed full time at the crossing. He worked a manually operated switch mounted at the base of the pole (see photo page 262). By routing scrapers in groups whenever possible, the number of stoppages of traffic was cut to a minimum.

The other example of a contractor-operated signal was used in Los Angeles, on the Santa Ana Parkway grading job of Peter Kiewit and Sons Co. (See lower photo). The new parkway axis crosses an extremely heavily traveled arterial, at the point of an eventual grade separation. Without waiting for the structure it was necessary to move a large volume of scraper dirt across the arterial. Here again, a light was the answer, the light in this instance being suspended over the center of the street and operated from a wooden tower mounted on high ground to one side.—*This article reprinted from Roads & Streets, Dec. 1946 issue.*

I.E.S. CODE PLUS PRESIDENT'S CONFERENCE EQUALS MORE LIGHT

More light for America will be a trend in the American "way of life" during the years to come when the 1945 Illuminating Engineering Society's Recommended Practice of Street and Highway Lighting is put into effect throughout the country. Added impetus to the nation-wide application of this Code during the next few years is expected to be provided by President Truman's Highway Safety Conference which was held in Washington last Spring.

Copies of the Code can be purchased for fifty cents per copy from the Illuminating Engineering Society, 51 Madison Avenue, New York 10, New York. A copy of the report of the Committee on Engineering prepared for the President's Conference can be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington, 25, D. C. for 15 cents.

YOU DON'T NEED EXTRA EQUIPMENT TO APPLY

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TRADEMARK OF M. M. & M. CO.

MILLIONS OF REFLECTIVE GLASS BEADS ARE PRE-MIXED IN SPECIAL "CENTERLITE" COMPOUND

The millions of microscopic glass spheres that give "Centerlite" its blazing reflective brilliance are thoroughly pre-mixed in a long-wearing compound.

You apply "Centerlite" exactly as you do ordinary marking materials. You use the very same equipment you've been using. "Centerlite's" glass beads are so uniformly graded that they flow smoothly through spray guns without marring nozzles or fittings.

You save time with "Centerlite," too, because pavement markings are applied *and reflectorized* in a single operation. Your crews can cover many more miles every working day.

And don't forget—"Centerlite" is the only reflective pavement marking material that increases in brilliance the longer it's on the road! The traffic wear that erases ordinary marking materials actually polishes "Centerlite" to ever-increasing brightness.

Write to Dept. TE347 for full information on "Centerlite," the new, brighter reflective pavement marking material.

WHAT IS "CENTERLITE"?

"CENTERLITE" is millions of microscopic glass spheres pre-mixed in a white or traffic yellow compound. Applied to a road surface, the compound bonds to the road in an even coating that *increases in brilliance with wear!*

THE SAFETY-CONDITIONING TEAM for every road and highway.

"SCOTCHLITE" for brilliant highway signs. Used on the highways of 48 states.

"CENTERLITE" for brilliant road markings. White or yellow. Easy to apply as ordinary road marking materials.

CENTERLITE

TRADEMARK OF M. M. & M. CO.

REFLECTIVE COMPOUND

Made in U. S. A. by **MINNESOTA MINING & MFG. CO.** Saint Paul 6, Minn.

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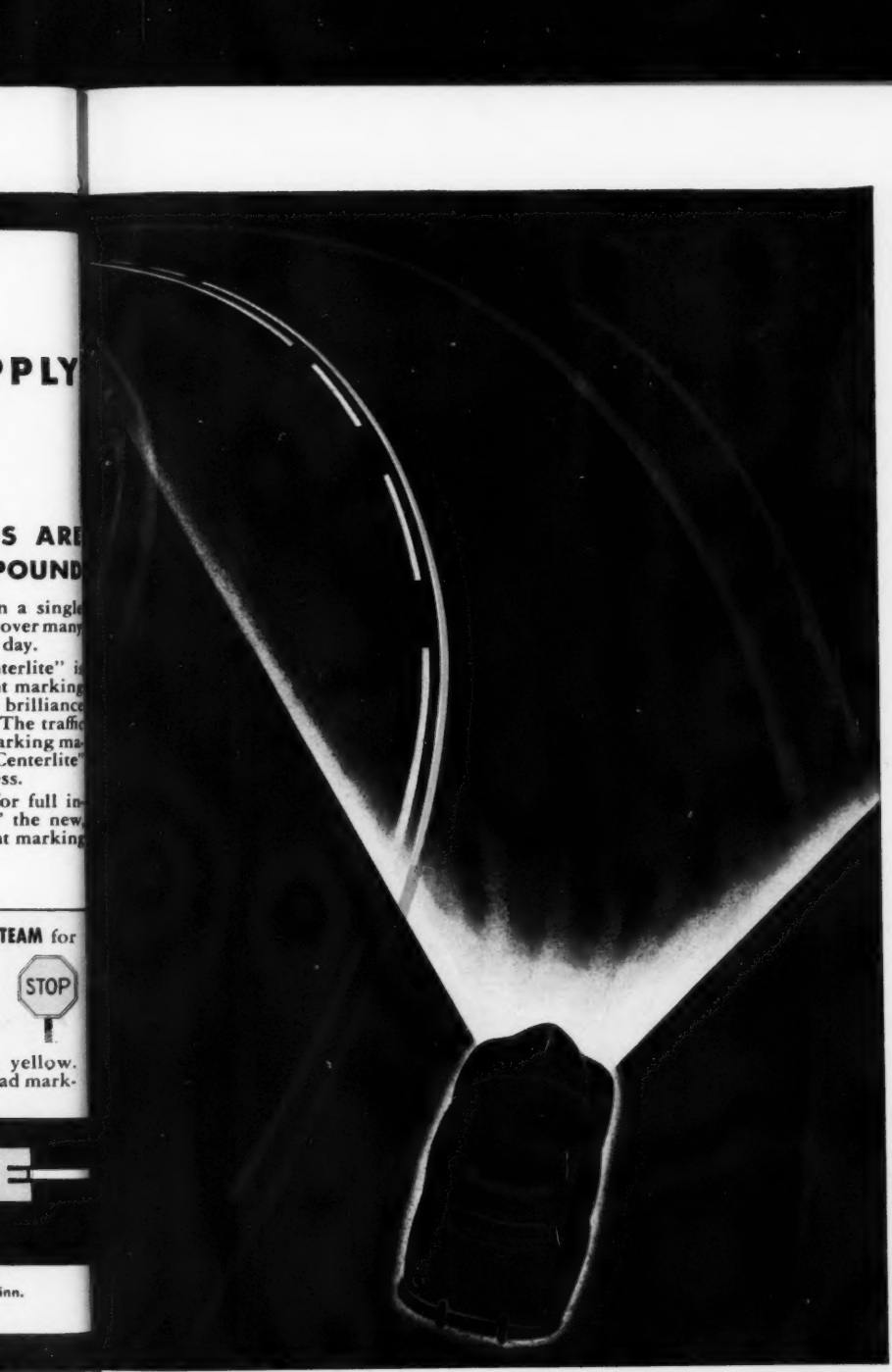

Milwaukee Completes O and D Survey

by MARGARET WOOLVERTON, *Associate Editor*
Traffic Engineer, Quinton Engineers, Ltd.

An origin-destination traffic study of the Milwaukee Metropolitan Area has recently been completed and a report published. The project was undertaken jointly by the Public Roads Administration, the State Highway Commission of Wisconsin and the local governments concerned. Its purpose was to make certain the approximately $7,000,000 available for highway purposes in this area would be spent most effectively.

Traffic Study Procedures

The area covered by the survey lies within the limits of Milwaukee County comprising 99.3 square miles and includes over 90 per cent of the population of the County.

The study consisted of two parts. The external study involved interviewing drivers at designated stations on all important highways entering the survey area. The residents of a selected sample of dwelling units in zones covering the entire survey area were interviewed in the internal survey. Also included in the internal study were the owners and operators of a representative sample of trucks and taxicabs.

The analysis of the survey data involved a study of the traffic movement between 141 zones and stations. Such two-way interchange of traffic is possible in 9,870 combinations. Actually, the survey recorded travel for over 6,000 of the possible combinations. The information obtained regarding all trips in the survey area was plotted upon maps as straight lines between each zone of origin and each zone of destination. The lines are called "traffic desire-lines." A trip was considered to be one-way travel between the point of origin and the point of destination.

Conclusions Regarding Suggested Expressways

An extensive and detailed analysis was necessary to establish which routes would attract traffic volumes warranting expressway construction and which would provide maximum service. For this purpose, an analysis was made of six routes which had been under public consideration. Four of these were north-south routes and two were east-west.

Studies showed that average weekday 24-hour volumes of from 12,500 to 46,500 could be anticipated on the routes under consideration. Comparable volumes on sections of maximum travel on each route varied from 14,700 to 57,200.

On the basis of the origin-destination study, it was determined that, from the standpoint of daily potential use, one north-south and one east-west expressway would be warranted. In addition, the concentration of origins and destinations in the Central Area warrants the construction of a belt line around this area to deliver traffic directly to the expressways and to keep as much traffic as possible from going through the Central Area which has no origin or destination in that area.

Other Studies

Over 2,000 miles of time-check trips were driven in the survey area. From these, it was determined that three-fourths of the motor vehicle

traffic in the area flows at less than 19 mph. and one-fourth at less than 14.

A traffic flow interruption study disclosed that the average Milwaukee driver makes nearly four (3.8) stops per mile and that in each such mile he loses an average of 56 seconds because of traffic congestion and controls, public transit vehicles and pedestrians.

Accidents and injuries on a five-eighths mile viaduct with no streets entering or crossing the structure were compared with the average of four five-eighths mile roadway sections which have intersecting streets. In 1941, the viaduct had only seven accidents, while there was an average of 138 on the sections with cross traffic.

Other Conclusions

1. "The areas having the greatest number of trip origins and destinations and the greatest concentrations of travel are in and around the Central Area and the construction of an expressway system should begin in this area and be extended outward toward the outlying districts as quickly as permitted by available funds."

2. "These expressways, together with the downtown belt line, would be the primary highway system to which the present street pattern would be coordinated."

3. "It is not practicable nor economically feasible to construct an unlimited number of expressways in any one area. Locations not directly served by an expressway and having a large number of traffic origins and destinations should be provided with adequate traffic facilities. This can be accomplished in some instances by providing suitable connections to the expressway and, in others, by improving present routes or providing parallel facilities."

4. "With the expressways as the trunk or stem of the traffic system, it is important that local street extensions, widenings, openings and paving be planned to fit in with the basic expressway layout . . . It is also important that extensions and connections with U.S. and State Highways be timed to coincide with the completion of the expressway so as to divert that traffic from crowded surface routes."

WHY TIRES WEAR FASTER ON CURVES

Change in the direction of a moving vehicle is obtained by the reaction of the tire in contact with the road surface. This reaction causes tire slippage and the amount varies from practically nothing on large curves at slow speeds to full skidding on sharp curves at high speeds. Slippage of rear tires is as much as, if not more than that of front tires; it is common knowledge that it is usually a rear tire that breaks into a full skid before a front one does.

What this slippage amounts to on varying curves at 20 m.p.h. is shown in Table 1.

Table 1.

Curve Radius	Slippage in feet per 100 ft. of forward travel
1125 ft.	0.375
750 ft.	0.750
500 ft.	1.500
250 ft.	3.000
125 ft.	6.000
62½ ft.	12.000
31¼ ft.	24.000

Table 2.

m.p.h.	Slippage in feet per 100 ft. of forward travel
10	0.75
20	3.00

30	6.75
40	12.00
50	18.75

Slippage also increases as the square of the vehicle speed. Table 2 shows speed increases affect slippage on a 250-ft.-radius curve. It is assumed in both cases that the road is dry, practically flat and of average surface construction. Banking would, of course, reduce the slippage. Vehicle weight, though it introduces variables, is not too important because increases in tire sizes are generally proportionate to increases in weight. Passenger cars have a greater tendency to slip, because of relatively lower air pressure and greater tire deflection.

As is often the case, figures alone are hard to interpret. But consider it this way. Suppose a truck rounds a 250-ft.-radius curve at 30 m.p.h. There are still many such curves on our American highways. To help visualize just how sharp this curve would be, we did a little figuring and found that to make a 90-deg. turn on such a curve, a vehicle would move forward approximately 400 ft.

Now, according to the table, for every 100 ft. the truck moves forward around our hypothetical curve at 30 m.p.h., it actually slips sideways 6.75 ft. By the time it completes a 90-deg. arc, it has slipped a total of 27 ft. and, in so doing, it has consumed an amount of tread rubber equal to 8000 ft. (a good mile and a half) of straight traveling, because wear on curves averages 20 times the wear on straight roads.

Data for this article supplied by Messrs. McCarthy and Shively of The Goodyear Tire & Rubber Co., Akron, to the Editor of Commercial Car Journal, Vol. LXXI, No. 5, July, 1946. Highway Research Abstracts, October, 1946.

Railroad-Highway Junction Safety Program Mapped

by CHARLES LECRAW, *Associate Editor*
Traffic Engineer, Eno Foundation

The need for a real live campaign against highway-railroad grade crossing accidents is effectively underlined in a report recently published by the Association of American Railroads, where it is revealed that 1875 persons are killed and 4700 injured each year (on the average) in these accidents. Such a campaign has been programmed by a joint committee of the National Safety Council and the Railroad Association and is included in the report.

The program is divided into five parts:

1. Collection and analysis of detailed accident statistics on a national and state level.
2. Preparation and distribution on a national scale of booklets, leaflets, posters, and other special material to assist in public education.
3. Engineering study of the physical hazards present at grade crossings.
4. Intensified effort by enforcement agencies in the enforcement of existing traffic regulations applying to grade crossings.
5. Promotion of the program through endorsement by state governors and other officials and through assistance from national, state and local safety councils.

Railroads Can Help

The report lists the following ways in which individual railroads may assist in carrying out the accident reduction program.

1. Early inspection of all grade crossings to see they are maintained in good physical condition.
2. Removal of unnecessary obstructions to the view of trains from highway where consistent.
3. Proper maintenance and location of warning signs, signals, gates, lights, etc.
4. Frequent check-up on efficiency of crossing watchmen, day and night.
5. Check back-up movements and flagging over crossings particularly on multiple tracks and in yard movements.
6. Special surveys of crossings where casualties have recently occurred with a view of taking any steps possible to prevent recurrence.
7. Inspect and insure proper maintenance of whistle and bell on locomotive.
8. Checks to be made as to proper and adequate sound of locomotive whistle when approaching and passing over crossings.
9. Ringing of locomotive bell when approaching and passing over crossings.
10. Check maintenance and display of locomotive headlights.

The report reviews the portions of the Uniform Motor Vehicle Code which are applicable to highway-railroad grade crossings and recommends that all railroads procure copies of the code and thoroughly familiarize themselves with its contents. The committee feels that the enactment by each state of the recommended laws will have a great deal to do with improving the accident record of all types of motor vehicle accidents.

N.S.C. Recommendations

Also included in the committee report and recommended for adoption are the following points from the "Highway-Railroad Grade Crossing Accident Prevention Program for States" dated February 1946 and published by the National Safety Council:

1. Reflectorized crossbucks at certain crossings where electric lighting and warning signals are not in use.
2. Placing two crossbucks at a crossing where only one has been previously erected.
3. Taking full advantage of federal, state and other money made available for purposes of grade separation, installation of flashing lights, automatic gates, and improved standard crossbucks.
4. Working closely with state and local traffic accident departments and commerce commissions in order to avail themselves of additional data on railroad grade crossing problems and hazardous locations.
5. Making every effort to repair and repaint and properly maintain crossbucks especially on secondary roads and in rural areas where it is impractical to install electric signs or signals.
6. Increasing and strengthening the accident prevention program within their own employe groups; also, taking full advantage of the National Safety Council's poster, film, and instruction aids for use among employes and the public.
7. Making every attempt to get to the scene of the accident as soon

after the accident as possible for purposes of investigation and gathering evidence which will be useful in the accident prevention program.

8. Giving greater attention to grade crossings where high speed trains are involved.
9. Reporting to city officials, vehicles passing signs and signals against existing regulations.
10. Cautioning pedestrians and trespassers of dangers involved in walking and crossing tracks.
11. Refusing to permit obstructions to the view within confines of the right-of-way.
12. Improving their system of warning lights, signals, bells and whistles to conform with the most effective standards of protection.

Inquiries regarding this report should be directed to Mr. L. C. Heilman, Secretary, Joint Committee on Grade Crossing Protection, Transportation Building, Washington, D. C.

LOS ANGELES AIMS AT WHIPPING PARKING PROBLEM

A three-step program, providing a total of 10,000 additional permanent parking spaces in downtown Los Angeles within three years, is well advanced and has been presented formally to the California Legislature's joint highway fact-finding committee headed by Senator Randolph Collier.

Although Los Angeles has some 40,000 parking spaces, business and government leaders recognize that the city is shy, and will be more so, of permanent and convenient facilities of the type that keep customers coming downtown.

An underground parking garage is proposed for construction under Pershing Square which would provide 2,500 spaces near the center of the downtown business district. The proposal envisions a four-story structure costing $3,000,000. As in the case of the subterranean garage under Union Square, San Francisco, the Pershing Square structure would interfere little with the beauty of the landscaped park. Financed and operated by private enterprise, the garage would revert to the city, when paid for by earnings.

Under the program, private enterprise also would lease and operate several new outdoor parking lots with a capacity of 3,000 cars on locations tributary to the central business district. Two thousand spaces would be reserved for short-time parking by shoppers only. These lots are expected to be in operation by the end of this year.

The above proposals are sponsored by the Downtown Business Men's Association through a recently formed Downtown Parking Association.

The third link in the program calls for the establishment of a Metropolitan Parking District, operating under the benefit district plan which has been widely used. Under this arrangement, the Metropolitan Parking District would provide by lease or purchase some 4,500 car spaces in open lots and garages. Site and construction costs would be assessed benefited property by the city and spread over a period of years.

To the 10,000 spaces provided by the above projects, later would be added 5,000 spaces which would be included in the construction of a new downtown sports auditorium project proposed by the Greater Los Angeles Plans, Inc. Those spaces would be available to workers and shoppers in daytime hours.

Although good progress was being made in parking plans for Los Angeles, the work was speeded along by Senator Collier who as committee chairman some weeks ago said, "the Committee must learn what you are doing about parking before it can favor extensive use of State funds to build needed freeways." Several freeways, or express highways, are in prospect for the Los Angeles area which would multiply the need for terminal parking facilities. — Courtesy Automotive Safety Foundation, Washington, D. C.

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CITIES BUILD PARKING GARAGES

Wheeling, West Virginia (61,099) is selling $550,000 of 20-year revenue bonds for the construction of a 600-car three-deck parking garage in the downtown business district. The city anticipates that revenue from a fee of 30 cents per day for all-day parking and from the 500 parking meters to be installed in the business district will pay for the garage in nine years. The only other city which has taken steps to erect a parking garage as a direct municipal service is Bluefield, West Virginia (20,641), which has already begun construction on an 800-car, five floor garage financed by $450,000 in revenue bonds. The city council of Dallas, Texas, recently instructed the city manager to study the feasibility of purchasing two downtown blocks for construction of parking facilities, to be financed by revenue bonds . . . In Phoenix, Arizona, the city manager has recommended the erection of a combination business building and parking garage . . . The Toledo, Ohio city plan commission has recommended the construction of a municipal parking garage to accommodate 1,500 cars. City-owned parking garages also are being discussed in Newark and New York City . . . The city council of Wilmington, North Carolina, has authorized the manager to develop a plan for underground parking, and in Memphis, Tennessee, the vice-mayor has recommended that an underground parking area be provided by the city for about 3,000 cars.

—*Public Management, Dec. 1946.*

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STREETER-AMET

HIGHWAY CAPACITY QUIZ

Editor's Note: Try your hand at answering these teasers. Then look on the next page and see how much you didn't know! This quiz was developed by the Highway Research Board Committee on Highway Capacity and submitted by Charles Prisk, Technical Editor of TRAFFIC ENGINEERING.

CHECK PROPER ANSWER

(See next page for correct answers)

		True	*False*
1.	Three-lane roads are more efficient when about 2/3 of the traffic is traveling in one direction than when traffic is evenly divided by direction.	....	....
2.	At high traffic volumes on three-lane roads, nearly 50 per cent of the traffic in the heavy direction uses the center lane.	....	....
3.	One tube of the Holland Tunnel has on some occasions carried about 2,000 vehicles per hour in each of the two lanes.	....	....
4.	The efficiency per lane in terms of vehicles per hour decreases as the number of lanes in one direction of travel are increased above two.	....	....
5.	Approximately 75 per cent of all traffic carried by a road during a year travels between the hours of 7 A.M. and 7 P.M.	....	....
6.	On most rural highways, 10 per cent of the annual average 24-hour volume will be approximately equal to the hourly volume which is exceeded only 10 times a year.	....	....
7.	On the average rural highway, the maximum hourly volume during any one year is about 25 per cent of the annual average daily volume.	....	....
8.	On no rural road does the maximum hourly volume during a year exceed 35 per cent of the annual daily volume.	....	....
9.	The annual average 24-hour volume will usually not be exceeded on more than 50 days a year.	....	....
10.	The maximum 24-hour traffic volume during a year is usually about 2¼ times the annual average 24-hour volume.	....	....
11.	The capacity of a 2-lane, 2-directional highway depends to a large extent upon the distribution of traffic by directions.	....	....
12.	The maximum capacity of a rural highway generally occurs at relatively low speeds, usually below 20 miles per hour.	....	....
13.	One well designed 4-lane expressway with controlled access and no cross traffic will accommodate the same number of vehicles per hour at nearly twice the average speed as 5 typical 40-foot city streets on which parking is prohibited.	....	....
14.	This same expressway will accommodate the same volume as 8 typical city streets 54 feet wide with parked vehicles.	....	....
15.	A 20-per cent increase in the annual traffic volume on a highway already congested will approximately double the hours of congestion.	....	....

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ANSWERS TO HIGHWAY CAPACITY PUZZLERS

(See quiz on preceding page)

1. *False.* Studies have shown that three-lane roads will handle traffic somewhat more efficiently when traffic is evenly divided by direction than when 2/3 of the traffic is in one direction.
2. *False.* At locations on rural highways where traffic is not influenced by intersections, the traffic in the center lane of a three-lane highway seldom exceeds 300 vehicles per hour. This has been the case even with a total traffic volume in excess of 2,000 vehicles per hour.
3. *False.* The maximum observed traffic volume in two lanes of the Holland Tunnel has been 2,506 vehicles per hour or an averege of 1,253 vehicles per lane per hour.
4. *False.* Traffic counts made on four-lane highways generally show more vehicles per lane than counts on the wider multilane highways because four-lane highways are more apt to be filled to their capacity, and it is more difficult to provide adequate access and egress facilities for the greater number of lanes. Three lanes in each direction, however, will sometimes provide more efficient operation than two lanes because it is possible to segregate turning movements at intersections. The Lake Shore or Outer Drive in Chicago, with its 8 lanes is one of the most efficient facilities.
5. *True.*
6. *False.* The traffic volume which is exceeded only ten times a year is 18 per cent of the annual average 24-hour volume on the average rural highway.
7. *True.*
8. *False.* At some locations, the maximum hourly volume during the year is in excess of 50 per cent of the annual average daily volume.
9. *False.* A study of 48 rural highway locations selected from 45 States shows that the traffic volume representing the annual average traffic day is exceeded on from 70 to 228 days during the year. On an average it is exceeded 160 days of the 365.
10. *True.*
11. *False.* Studies have shown that on a two-lane two directional highway the distribution of traffic by directions has little or no effect on the total capacity of the highway.
12. *False.* The maximum capacity of a rural highway generally occurs with vehicles moving about 30 miles per hour.
13. *True.* A well designed four-lane expressway with controlled access and no cross traffic will accommodate 1,500 vehicles per lane per hour or a total of 3,000 vehicles per hour in the one direction at an average speed of 30 to 35 miles per hour; whereas, the average 40 foot city street on which parking is prohibited accommodates only a total of 1,400 vehicles in the one direction per hour of green indication. Assuming that the green period of the traffic signal is 43 per cent of the total cycle, the traffic volume in one direction on the average city street is about 600 vehicles per hour, or 1/5 of the traffic volume that a well designed expressway will accommodate in one direction.
14. *True.* Typical downtown city streets with parking are only 50 per cent as efficient as the same streets without parking.

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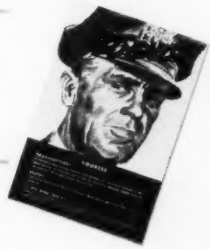
#2 . . . in ACCIDENTS AVERTED

When adequate safety lighting goes in—most of the danger of night traffic goes out. For example, Los Angeles recently relighted 8 locations—and night accidents promptly dropped 50 per cent. By installing good street lighting on one street alone, Spokane cut night smash-ups from an average of 3 a year to about one every two years!

Average reduction in night traffic accidents, country wide . . . in cities, towns, villages . . . is one out of two. Thus, modern street lighting pays for itself many times over . . . in accidents prevented, in fatalities averted. You get all its other benefits as a bonus: crime prevention, increase in real estate values and in civic pride, the improvement of local business.



For ideas you can use in selling better street lighting to your community, contact your electric utility and write for "Evidence," just published by The Street & Traffic Safety Lighting Bureau, 155 E 44th Street, New York City.

GOOD STREET LIGHTING

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15. *False.* A 10 per cent increase in the annual traffic volume on a highway already congested will approximately double the number of hours of congestion. A 20 per cent increase in traffic volume will quadruple the number of hours of congestion.

METROPOLITAN AREA O-D STUDIES NOW TOTAL 55

The travel habits of a community can now be measured as accurately and inexpensively as a mid-decade population census.

For the past two years a committee of the Highway Research Board, working with the Public Roads Administration, various State Highway Departments and city officials, have developed new techniques, based upon interview sampling methods, to determine the mode, purpose and time of travel for every person residing within a metropolitan area—something not hitherto attainable in any type of urban traffic survey.

Chairman of the Committee is Grant Mickle, traffic engineer of the Automotive Safety Foundation, and the Secretary is John Lynch of the Public Roads Administration.

High property values, complicated design problems, growing congestion and the lack of efficiency in urban streets all emphasize the need for factual information on the volume and characteristics of highway travel. These data must point the way to the proper location and design of new city expressways. They are also needed to make possible the most efficient use of existing traffic facilities.

Metropolitan area traffic studies of this home-interview type have been completed or are now being made in 55 metropolitan areas, ranging in size from 20,000 to over a million population. Illustrative of how these data may be applied to practical traffic problems is the recent report on the Highway Plan for Fort Wayne, Indiana, in which the officially approved long-range traffic plan provides for construction of express highways, a belt highway, off-street parking facilities, more efficient street use through one-way streets and curb parking controls, and minor street improvements. The survey showed that of the 130,000 daily vehicular trips in Fort Wayne, 82% were made by passenger cars, 14% by trucks and 4% by taxis. Of this traffic, 74% occurred entirely within the city. Of the 26% external traffic, 92% was bound either to or from the city with only 8% desiring to bypass. The plan is designed to handle the 75% increase in traffic anticipated by 1965.

Expressways Reduce Accidents 30%

The two limited access express highways in the Fort Wayne plan totaling 11.5 miles in length, would be constructed over a 10-year period, with each year's work providing a useful section of highway. It is stated that the highways would not only "insure a permanent solution of the major traffic problems in Fort Wayne," but would "reduce vehicular traffic accidents in Fort Wayne approximately 30 per cent each year, saving lives and property loss estimated at $400,000 annually . . ." Savings in driving costs are estimated at $700,000 yearly.

A practical survey manual will be issued by the Origin and Destination Survey Committee soon. Work for the coming year will include a report on practical application of the field data to such problems as marketing analysis, expressway design and location, off-street parking, transit improvement, and more efficient use of existing traffic facilities.

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ITE NEWS AND PERSONALS

SECTION NEWS

Michigan I.T.E. Section

The meeting on January 31, 1947, was held at the Detroit-Leland Hotel, Detroit. In attendance were:

T. T. Wiley
F. A. Ronan
Tom McCarthy
Don Crosier
Graydon Snyder
J. R. Noyes
W. L. Potts
C. M. Glasgow
H. M. LeRoy
O. M. Gunderson, *Sec'y - Treas.*
Al Malo
H. A. Barnes
F. C. Eisenach
J. Dobelek
G. D. Heggie
Ross Harger, *Vice-President*
C. S. Michalski
J. L. Wehmeyer
E. C. Simm
E. I. Shulman
M. D. German

In the absence of President McMonagle, the meeting was called to order at 8:15 P.M. by Mr. Harger, vice-President. It was announced that the next meeting would be a luncheon meeting at the Pantlind Hotel, Grand Rapids, on Tuesday, February 25, 1947. This date is the first one of the three-day Michigan Highway Conference.

The Secretary was instructed to write to Mr. W. S. Smith, Secy.-Treas., I.T.E., to get information regarding responsibilities of the Michigan Section in developing a financial program for the 1947 National I.T.E. Convention, to be held in Detroit.

Eight members of the Institute gave short talks on subjects which had been previously assigned. The members and their subjects are as follows:

Barnes—Signals.
Dobelek—Major Thoroughfares.
Eisenach—Reflectorization.
Wiley—School Crossings.
LeRoy—Signal Coordination.
Malo—Grand River.
Potts—Auto Club Traffic Committees.
Shulman—Metropolitan Area Signing.

These discussions were so well received, it was decided to have another similar meeting with other members giving talks on a different set of subjects.

Washington, D. C. Section

The January 15 meeting was held at the Fairfax Hotel, a joint meeting with the Washington, D.C. Section, American Institute of Planners.

After a social hour and dinner, the meeting was called to order by President Eliot. Twenty-two members, two guests and fifty-nine members of the American Institute of Architects were present. The following officers of the American Institute of Architects were introduced: Mr. Burlaw, President; and Mr. Harry Barrett, Secretary.

Mr. Harvey Law, Administrator of the Washington National Airport, gave a very interesting talk and discussion on the design and traffic features of airports, explaining some of the difficulties encountered in present airport design and suggesting many new features which may be incorporated in new airport design.

PERSONAL ITEMS

Lawrence Waterbury, (Member I.T.E.), Associate Engineer with Parsons, Brinckerhoff, Hogan & MacDonald, New York Consulting Engineers, began supervision of a traffic survey of Fort Worth, Texas last month. The work will be directed primarily at parking problems, and recommendations will be forthcoming regarding development of off-street facilities.

Lt. Col. Simon M. Lutz, Jr., (Assoc. Mem. I.T.E.), U.S. Engineers Office, Los Angeles, Calif., visited Washington, D.C. last month on official business for the War Department.

Leslie Williams, (Member, I.T.E.), City Planning Engineer of the American Transit Association, addressed the Commercial Vehicle Section of the Greater New York Safety Council at their luncheon meeting on January 23rd in New York City, entitling his talk, "Prescription for Urban Congestion."

Major Belkin, (Assoc. Member, I.T.E.), formerly with the Road Design Division, Michigan State Highway Dept., has joined Nickels and Hensley, industrial engineers with offices in Grand Rapids, Michigan. Belkin was formerly Municipal Traffic Engineer of Kalamazoo, Mich. Mr. Belkin will be Manager of the Traffic Engineering Division of the engineering organization and will offer services to cities and states.

Maxwell Halsey, (Member, I.T.E.), is currently conducting a parking study of Fort Wayne, Indiana. He is Executive Director of the Michigan State Safety Commission.

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53 years old. Broad technical administrative planning and editorial experience. Interested in traffic or city planning work in vicinity of New York City if possible. Interested parties contact EDITOR, TRAFFIC ENGINEERING MAGAZINE.

Crouse-Hinds Celebrates Fiftieth Year

This year, 1947, marks the celebration by the Crouse-Hinds Company of its 50th year of service. This organization, located in Syracuse, N. Y., is best known in the traffic engineering field for the traffic signal equipment this Company has supplied for many years. Products manufactured and sold by Crouse-Hinds have included electrical switchboards, electrical conduit, headlights, and signalling equipment.

Eno Foundation Issues Parking Manual

Realizing the increased public interest in parking and the rapidly increasing difficulties of the problem, the Eno Foundation has released its second publication on the subject—a book of 119 pages entitled "Parking."

Problems are discussed in detail and corrective measures are recommended.

The contents are comprehensive and, in addition to discussing the urban situation, a chapter is devoted to parking regulations as they relate to rural roadways.

The publication is well illustrated and contains simple forms of field sheets for use in studying parking

problems, as well as diagrams and layouts of parking areas.

Copies are available upon request to the Eno Foundation, Saugatuck, Connecticut.

Marbelite Acquires Horni Signal Division

The Signal Division of the Horni Signal Manufacturing Company has been acquired by the Marbelite Company, Inc., according to a recent announcement. This acquisition, together with the Signal Service Co., which Marbelite took over about a year ago, places this firm in a leading position to handle traffic signal propositions.

Engineers' Club Formed In Wash. D. C.

At a recent luncheon meeting called by the District of Columbia Council of Engineering and the Architectural Society, it was agreed to organize an Engineers' Club, with those present to become charter members. Each Society in the District will submit its own list of members desiring to become charter members to Mr. S. L. Gregg, Acting Secretary, 4828 Edgemoor Lane, Bethesda 14, Md., by March 31st.

The D. C. Club, including in its membership some of the Washington, D.C., I.T.E. Section members, will hold monthly luncheon meetings at O'Donnell's Restaurant. The April 21st meeting will feature election of permanent officers.

Long Beach, California Appoints Traffic Engineer

Mr. Carl B. Wirsching, City Manager of the City of Long Beach, California, has recently created a traffic division under the supervision of the City Engineer, Mr. George E. Baker. A. J. Napier has been appointed Traffic Engineer and has been authorized to formulate plans for such a division. All previous traffic work has been done by the Traffic Division of the Police Department and all necessary studies, counts and recommendations have been made by them.

ON THE SHELF

Report on New York State Thruways and Arterial routes, The Buffalo Urban Area, Erie County, New York, by the New York Department of Public Works. The Department, 1946. 108 pp. plus plates.

Contains background data on population, motor vehicle registration, traffic volume, land use, etc.; origin and destination survey, traffic forecast, capacities of existing streets; recommendations for thruways and terminals, estimated costs and traffic and population forecasts as results of improvements. Profusely illustrated.

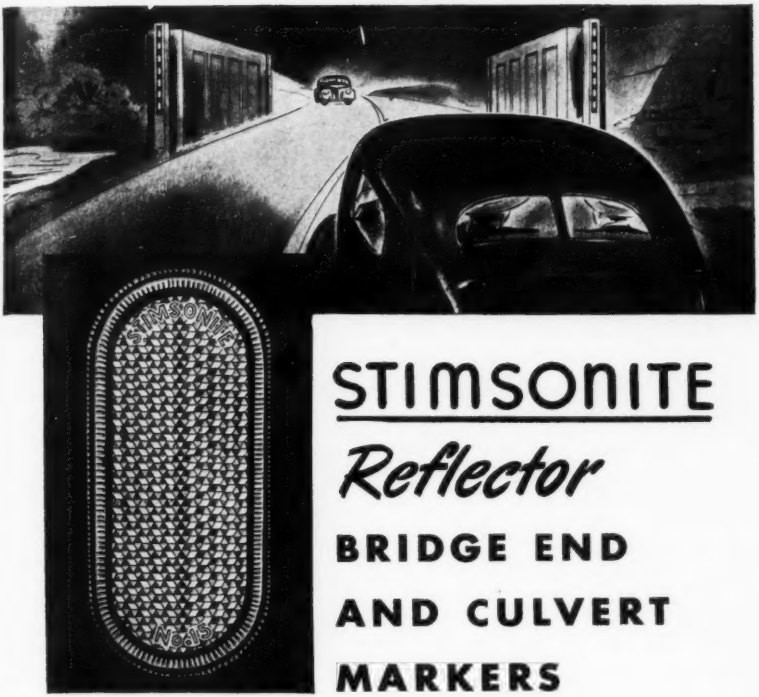
A Traffic Survey of the Providence Metropolitan Area — 1945, by the Rhode Island Department of Public Works in cooperation with the Public Roads Administration.

LETTERS TO THE EDITOR

New Specs Committee Chairman Reports

Dear Editor:

I would like for you to reproduce this letter in the next issue of TRAFFIC ENGINEERING under I.T.E. news and persons as an official report from the chairman of the reorganized *Standards and Specifications Committee,* I.T.E. In order to acquaint each member with the present Committee organization, my new "family" of 90 Committee members is divided into six Sub-Committees as follows: TRAFFIC SIGNALS, Wayne N. Volk, Chairman; SIGNS



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Stocked in two standard lengths:
12¼-inches with four reflectors.
20½-inches with seven reflectors.

Complete information and illustrated folder on request.

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A·G·A

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AND MARKINGS, D. W. Loutzenheiser, Chairman; PARKING, E. G. Wetzel, Chairman; URBAN REDEVELOPMENT, Frank C. Eisenach, Chairman; TRAFFIC ENGINEERING DEFINITIONS, Earl J. Reeder, Chairman; and FUNCTIONS OF A TRAFFIC ENGINEERING DEPARTMENT, Harry E. NEAL, Chairman. The primary purpose of this reorganization was to broaden the scope of activities of the Standards and Specifications Committee to include other major items developed by the Traffic Engineering profession. In the past, the Committee has only been able to devote a major portion of its time to standards and specifications of traffic signals. It is possible that in the future, we will develop a technical board consisting of representatives of each of the sub-committees. This board will then be the official authority to pass on all specifications submitted by sub-committees and submit to the Board of Direction for final approval for inclusion in future technical bulletins.

In order to give the Sub-Committees an initial send off, certain key members of the Institute were selected as Committee Consultants. In most cases, these Consultants were formerly members of the Standards and Specifications Committee or are considered specialists in their respective fields and are in the best position to furnish technical advice to Committee Chairmen on activities of their respective committees. Consideration was also given to the fact that these Consultants had many additional responsibilities in connection with Institute affairs and were not in a position to devote full time to this particular Committee. As I have explained to the Committee Chairmen, my official "family" is entirely too large for me to maintain individual contact with every member, consequently I am depending on the Chairmen to carry on the work of the committees as if it were a separate committee of the I.T.E. It will be my primary duty to coordinate the various activities and assist in arranging Committee meetings, progress reports, and papers at the Annual Meeting.

In order to assure a definite plan of action for the coming year, I have scheduled a meeting of the Standards and Specifications Committee in New Haven, Conn. on February 22 to coincide with the date set for a reunion of Bureau graduates. Most of the Sub-Committees have representatives who will be in attendance at the reunion and in a position to submit a formal report on the proposed activities of their sub-committee. Later in the year, I am planning another meeting, probably in Chicago in conjunction with the Mid-west Safety Conference so that Committee members who are not able to get to New Haven may be in a position to schedule a visit to Chicago. My third and last Committee meeting will probably be scheduled for the afternoon of October 2 in Detroit, just prior to the opening of the I.T.E. Annual Meeting. With these three scheduled meetings, we are assured of definite progress and coordinated action for the coming year. It is our plan that at least five of the Sub-Committees will be in a position to submit interesting papers as part of the technical sessions at the Annual Meeting. I am working closely with Arnold Vey, Chairman of the Program Committee to develop Committee reports into technical papers.

The general objective of each of the six Sub-Committees is to develop a NUMBER ONE project for the coming year and carry along one or two additional projects that can replace the NUMBER ONE project upon its completion. In this manner, we hope to carry one standard or specification through to ultimate completion and then pick up each successive one and complete it as rapidly as possible. In order to do this, it will be necessary that our Committee remain practically intact for a considerable length of time. Accordingly it is my plan to ask the Board to hold my Committee membership intact except for minor changes each year until we have made material contributions to the Traffic Engineering profession.

On a recent visit to New Haven, I was delighted to learn from Wilbur Smith that we had received at that time almost 99% favorable responses from selected Committee members. With such wholehearted cooperation on the part of Institute members, I see no reason why we cannot look forward to one of the most successful and progressive years the Committee has yet enjoyed. Since I am not in a position, as stated above, to contact each of my "family" personally, I will use this means to thank each and every one personally for their interest and cooperation in our Committee activities. I want each Committee member to feel free to drop me a personal note at any time in connection with Committee activities. Other than that, I am leaning quite heavily on my Committee Chairmen to "carry the ball" and all indications point to the fact that they are all quite capable of assuming the responsibility.

Sincerely,

ROBERT S. HOLMES,
Chairman, Standards and Specifications Committee, Safety Branch, P. & A., U. S. War Department

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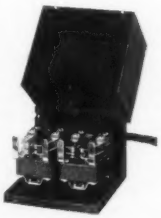

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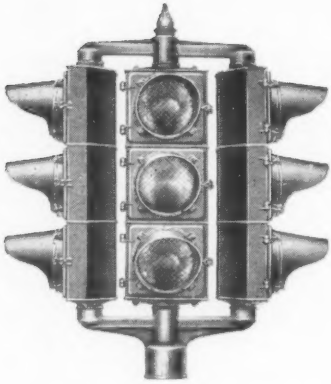

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